

Intraperitoneal Bladder Rupture Following Trivial Trauma in a Healthy Male - A Case Report

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Abstract

Urinary bladder rupture is usually seen in high impact trauma and associated with pelvic fracture. It may be extraperitoneal {EP} or intraperitoneal {IP}. IP ruptures are difficult to diagnose. Haematuria and pelvic pain are known presentations of bladder rupture. Urinary bladder rupture following a trivial trauma on full bladder in a healthy middle-aged male with no comorbidities, presenting with transient haematuria and gas under diaphragm are an extremely rare occurrence.

Keywords: Intraperitoneal Rupture; Bladder Trauma

Introduction

Urogenital tract injury is seen in approximately 10% of all cases of blunt abdomino pelvic trauma with bladder rupture reported only in 1.6% of these cases [1,2]. Due to the natural protection offered by the bony pelvis, urinary bladder injury is rare and usually associated with a high-impact injury [2,3]. Bladder rupture is classified as either extraperitoneal (EP) or intraperitoneal (IP). EP rupture is more common and results from forceful impact to the anterior bladder wall [2,3]. IP ruptures usually result from a rise in intravesicular pressure following an abdomino pelvic impact that causes rupture of one of the weaker points of the bladder such as the dome [2,3].

Extraperitoneal is usually seen with pelvic fracturs while increased intravesicular pressure and compression from adjacent pelvis are responsible for intraperitoneal rupture [4]. The diagnosis of IP rupture is difficult as urine drains into the abdominal cavity. Absorption of urine into the systemic circulation can cause major electrolyte and metabolic disturbances [5].

Case Presentation

46-year male, no known comorbidities, presented to the A & E department of a peripheral zonal hospital with complaints of retention of urine since morning. He was a security guard by profession and gave history of falling off his bed. On clinical examination, he was hemodynamically stable with suprapubic dullness to percussion and no bony injury. He was managed with catheterization and advised surgical consultation on OPD basis. The catheterization was smooth. He, however, had haematuria post catheterization which resolved with bladder wash.

The patient reported to A & E again in the evening with suprapubic discomfort. Clinical examination revealed lower abdominal guarding and tenderness. PUC was *in situ* with no gross haematuria. USG KUB revealed no significant findings. CXR PA done in view of diffuse tenderness and guarding showed gas under diaphragm (Figure 1). Based on clinical and radiological findings, patient was admitted to acute surgical ward and planned for exploratory laparotomy with provisional diagnosis of hollow viscus perforation.

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Figure 1: CXR showing gas under diaphragm.

The patient was taken up for ER exploratory the same evening. CT scan was not done in view of gas under diaphragm. Per operatively, on opening the abdomen, there was no sign of any hollow viscus perforation. A thorough search of the intestines revealed no perforation or contamination. An examination of the pelvis keeping in mind a diverticular perforation revealed bulb of Foley catheter peeping through a 10 cm vertical rent in the urinary bladder!



Figure 2: Rent in the bladder.

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Figure 3: Two-layer repair.

The rent, extending from dome of the bladder downwards was repaired in two layers with absorbable suture. The post op period was uneventful and the patient made a full recovery. The PUC was removed on day 20. IVU study done after 1 month revealed no leak.

Discussion

Traumatic rupture of the bladder is relatively rare due to it being located within the bony pelvis [6] posterior and superior to the pubic symphysis, and secured by the many ligamentous attachments to structures in the pelvic cavity [7]. The peritoneal folds create false ligaments at the superior portion of the bladder and a tough ligamentous attachment affixes the neck of the bladder to the pubic symphysis which allows for stability without affecting the bladder capacity [4,8].

The most common mechanisms of injury are motor vehicle or motorcycle collisions (45%), falls from altitudes greater than 15 ft (20%), and auto-pedestrian collisions disrupting distensibility [9]. Additionally, the bladder is surrounded by loose connective tissue which separates it from adjacent structures thereby creating an additional layer of protection [6]. The clinical presentation of bladder trauma patients may vary based on injury severity, but most patients have gross haematuria, difficulty with or painful voiding, and suprapubic pain [3]. In the last decade, nearly all bladder injuries reported in the literature have been associated with gross haematuria and pelvic fractures [9]. It is extremely rare to sustain an isolated traumatic bladder injury in the absence of a pelvic fracture [1].

During our literature search, we were only able to find less than a handful of cases of blunt traumatic bladder rupture in the absence of a pelvic fracture. Unlike the cases where the patients suffered high-impact and high-velocity traumas, the present case describes a low-impact trauma (fall from bed) leading to an Intra-peritoneal bladder rupture. In addition to our patient presenting after a blunt low-impact trauma, our patient had no associated pelvic fracture. This case is particularly interesting as blunt traumatic intraperitoneal bladder rupture would have been missed if not for the miniscule amount of gas under diaphragm likely as a result of catheterization.

We present this unique case to show that even a trivial trauma on full bladder can lead to intra peritoneal bladder rupture. According to recommendations of the Eastern Association for the Surgery of Trauma (EAST) and the American Urologic Association (AUA), patients

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are grouped based on their baseline risk. For example, in low-risk patients presenting with microscopic haematuria only, no radiographic imaging is indicated. In patients with moderate risk and gross haematuria as well as in high-risk patients, CT cystogram is the investigation of choice. CT cystography is the initial imaging modality of choice in the acute setting due to its comparable accuracy and utility being compatible with trauma CT surveys in patients with suspected bladder injuries [9].

Conclusion

Traumatic bladder rupture is typically seen following blunt trauma in patients presenting with haematuria who also have pelvic fractures; however, the diagnosis should considered even in patients presenting with trivial trauma when the obvious has been ruled out. Prompt diagnosis of bladder rupture is necessary as missed injuries could result in complications such as pelvic infections, sepsis, and urinary fistulae. This kind of injury requires a high degree of clinical suspicion and serious complications could arise if a bladder injury is not detected.

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